CLAIMS

1. A spin bowl, comprising:

a base and a sidewall that extends from the base, the base having an upper portion for supporting a substrate in a horizontal plane and a lower portion that intersects with the sidewall, the lower portion of the base having a plurality of drain holes formed therein proximate to the sidewall, each of the plurality of drain holes being configured to trap fluid therein during spinning of the spin bowl to thereby form a fluid seal that prevents air from flowing therethrough.

2. The spin bowl of claim 1, wherein each of the plurality of drain holes is substantially V-shaped.

3. The spin bowl of claim 1, wherein the sidewall is configured to define a fluid catch area, and each of the plurality of drain holes is in fluid communication with the fluid catch area.

4. The spin bowl of claim 3, wherein each of the drain holes has an inlet at an interior of the spin bowl and an outlet at an exterior of the spin bowl, and each of the drain holes is oriented so that the inlet is closer to a center of the spin bowl than the outlet.

5. The spin bowl of claim 3, wherein each of the drain holes is oriented at an angle in a range from about 30 degrees to about 60 degrees relative to the horizontal plane defined by the upper portion of the base.

6. The spin bowl of claim 3, wherein each of the drain holes is oriented at an angle of about 45 degrees relative to the horizontal plane defined by the upper portion of the base.

7. An apparatus for spin coating a film over a substrate, comprising:

a rotatable spin bowl, the rotatable spin bowl having a base and a sidewall that extends from the base, the base having an upper portion for supporting a substrate in a horizontal plane and a lower portion that intersects with the sidewall, the lower portion of the base having a plurality of drain holes formed therein proximate to the sidewall, each of the plurality of drain holes being configured to trap fluid therein during spinning of the spin bowl to thereby form a fluid seal that prevents air from flowing therethrough; and

a lid secured to the rotatable spin bowl so as to define a closed chamber, the lid being configured to mate with the sidewall of the rotatable spin bowl so that an underside of the lid is in close proximity to a top surface of the substrate supported on the upper portion of the base.

8. The apparatus of claim 7, wherein each of the plurality of drain holes is substantially V-shaped.

9. The apparatus of claim 7, wherein the sidewall is configured to define a fluid catch area, and each of the plurality of drain holes is in fluid communication with the fluid catch area.

10. The apparatus of claim 9, wherein each of the drain holes has an inlet at an interior of the spin bowl and an outlet at an exterior of the spin bowl, and each of the drain holes is oriented so that the inlet is closer to a center of the spin bowl than the outlet.

11. The apparatus of claim 9, wherein each of the drain holes is oriented at an angle in a range from about 30 degrees to about 60 degrees relative to the horizontal plane defined by the upper portion of the base.

12. The apparatus of claim 9, wherein each of the drain holes is oriented at an angle of about 45 degrees relative to the horizontal plane defined by the upper portion of the base.

13. A method for spin coating a film over a substrate, comprising:

disposing a substrate in a spin bowl;

spinning the spin bowl at a relatively low speed;

injecting a first fluid into the spin bowl;

as the spin bowl is spinning, capturing excess fluid proximate to an outer edge of the spin bowl to form a fluid seal that prevents air from flowing into the spin bowl through drain holes formed therein;

applying a second fluid on a surface of the spinning substrate; and

spinning the spin bowl at a relatively high speed to spread the second fluid over the surface of the substrate.

14. The method of claim 13, wherein, after the operation of spinning the bowl at the relatively high speed to spread the second fluid over the surface of the substrate, the method further comprises:

bringing the spin bowl to rest.

15. The method of claim 13, wherein, after the operation of applying the fluid on the surface of the spinning substrate, the method further comprises:

securing a lid to the spin bowl so that the substrate is enclosed within a closed chamber.

16. The method of claim 13, wherein the first fluid is comprised of a solvent.

17. The method of claim 16, wherein the first fluid is injected toward an outer edge of the spin bowl through a backside rinse channel.

18. The method of claim 13, wherein the second fluid is selected from the group consisting of a photoresist material, a low k dielectric material, a spin-on-glass, and a dye chemical used in the fabrication of recordable compact discs.

19. The method of claim 13, wherein the excess fluid is captured in substantially V-shaped drain holes.

20. The method of claim 13, wherein the excess fluid is captured in a fluid catch area defined by a sidewall of the spin bowl, and each of the drain holes formed in the spin bowl is in fluid communication with the fluid catch area.

21. A spin bowl, comprising:

a base and a sidewall that extends from the base, the base having an upper portion for supporting a substrate in a horizontal plane and a lower portion that intersects with the sidewall, the lower portion of the base having a plurality of drain holes formed therein proximate to the sidewall, the sidewall having an upper portion that extends upwardly from the base and a lower portion that extends downwardly from the base so as to at least partially define an external fluid catch area that receives excess fluid that drains from an interior of the spin bowl through the drain holes, the external fluid catch area being configured to retain the excess fluid while the spin bowl is spinning and thereby prevent the excess fluid from leaving the spin bowl at high velocity.

22. The spin bowl of claim 21, wherein the lower portion of the sidewall is inclined inwardly so that a tip thereof is situated closer to a center of the spin bowl than a point at which the lower portion of the sidewall intersects with the upper portion of the sidewall.

23. The spin bowl of claim 21, wherein each of the drain holes has an inlet at an interior of the spin bowl and an outlet at an exterior of the spin bowl, and each of the drain holes is oriented so that the inlet is closer to a center of the spin bowl than the outlet.

24. The spin bowl of claim 21, wherein each of the drain holes is oriented at an angle in a range of about 30 degrees to about 60 degrees relative to the horizontal plane defined by the upper portion of the base.

25. The spin bowl of claim 21, wherein each of the drain holes is oriented at an angle of about 45 degrees relative to the horizontal plane defined by the upper portion of the base.